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NOTES ON GEOGRAPHIC DISTRIBUTION

Pisces, Perciformes, Gobiidae, *Ctenogobius stigmaticus* (Poey, 1860): new species record at Patos Lagoon estuary, state of Rio Grande do Sul, Brazil

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ABSTRACT: The present note records for the first time the gobiid fish *Ctenogobius stigmaticus* (Poey, 1860) at Patos Lagoon stuary, state of Rio Grande do Sul, southern Brazil. The known distribution of this species is therefore extended 600 km southwards.

Five of the 40 Gobiidae species recorded in Brazil (Menezes *et al.* 2003) have also been reported in the Patos-Mirim Lagoon, the largest estuarine complex (approximately 14,000 km^2) in southern Brazil (Figure 1). *Bathygobius soporator* (Valenciennes, 1837), *Ctenogobius smaragdus* (Valenciennes, 1837), *C. shufeldti* (Jordan and Eigenmann, 1887), *Gobionellus oceanicus* (Pallas, 1770), and *Gobiosoma parri* Ginsburg, 1933 (Chao *et al.* 1982; Lucena and Lucena 1982; Sinque and Muelbert 1998). We provide herein the first record of *Ctenogobius stigmaticus* (Poey, 1860) in the Patos Lagoon estuary.

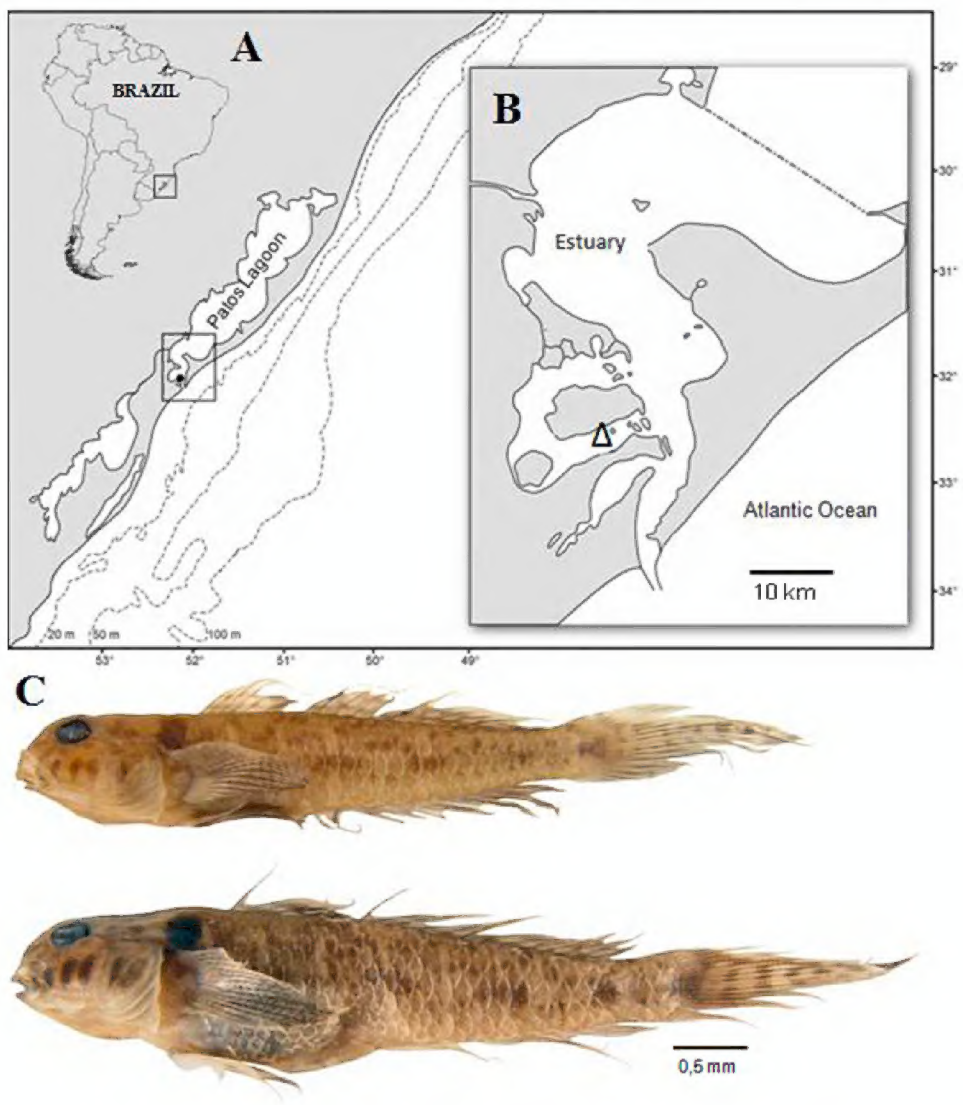

FIGURE 1. Patos Lagoon in southern Brazil (A) and the current record (Δ) of the species in the estuarine zone of Patos Lagoon (B), where specimens of *Ctenogobius stigmaticus* (C) were captured.

In April 2004, two individuals were caught using beach seine hauls in a protected shallow water (< 1.5 m) area of the estuary locally know as 'Porto Rei' (32°00.967'S, 52°08.089'W) (Figure 1). Specimens were preserved in 10 % formalin and identified based on Menezes and Figueiredo (1985). Vouchers are deposited at the Ichthyology Laboratory, Universidade Federal do Rio Grande (FURG) (FURG 04-0008).

This new record extends more than 600 km southwards the known distribution of this species, which was previously recorded from North Carolina, USA, to the state of Santa Catarina, Brazil (Menezes *et al.* 2003). However, along with two other goby species that occur in the Patos Lagoon, *Bathygobius soporator* and *Ctenogbius smaragdus*, *C. stigmaticus* is considered a tropical species (Froese and Pauly 2009). All three species are usually found in the southeast and northeast of Brazil (Menezes *et al.* 2003).

The shallow waters of Patos Lagoon estuary have been sampled monthly between 1978 to 1984 and continually since 1996 (LTER-Site 8 - MCT/CNPq) and is possible that *C. stigmaticus* has been overlooked, specially owing to Gobiidae low abundance and cryptic fish habitat. But the occurrence of these tropical fishes in a subtropical estuary could be linked to natural factors such as the Brazilian Current, which runs along the southwest coast of the Atlantic Ocean, bringing warm superficial waters from the tropical to the subtropical region (Vieira and Musick 1994; Ramos and Vieira 2001). Anthropogenic factors can also control zoogeographic shifts in fish distribution. For instance, ship's ballast waters have been identified as a vector for introduction of non-indigenous gobies elsewhere (*e.g.* Sapota and Skóra 2005). It remains unclear whether the occurrence of *C. stigmaticus* in the Patos Lagoon reflects a recent range extension due to global warming, or an introduction mediated by ship ballast water, or simply an overlooked species that occurs at low densities near its southern distribution range limit. However, because both seawater temperatures and ship traffic tend to increase,

it is important to monitor for the potential arrival of small fishes that are expected to respond faster to global warming (Hiddink and ter Hofstede 2008). Further investigation should be carried out to determine if similar zoogeographic shifts are occurring in other animal groups inhabiting the Patos Lagoon estuary.

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